

# **Testing & Commissioning: Verifying Building Performance Meets the Code Requirements**

**检测和测试**

**验证建筑性能满足规范要求**

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马里兰州,盖斯贝格**

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Director of China Operations  
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# Previous Topics Covered

# 前面涉及到的内容



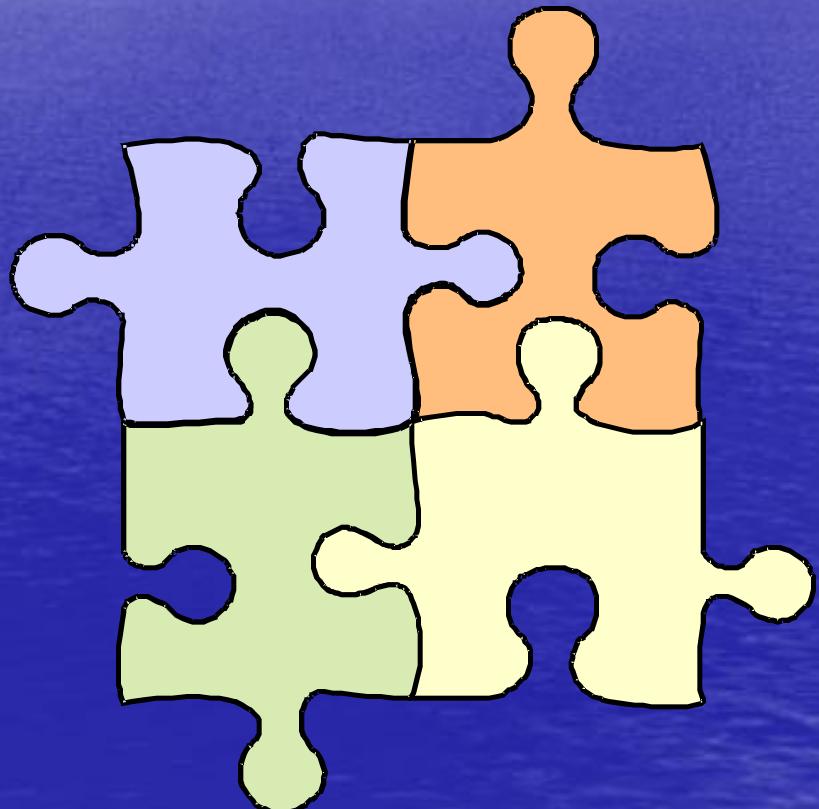
- **Product Standards**  
产品规范
- **Installation Codes and Standards**  
安装规范和标准
- **Building Codes**  
建筑规范

# The Missing Piece

## 遗漏的部分

**Verification that  
everything  
actually works**

验证所有环节确实  
工作



# Why is it Needed?

为什么需要？



# Code Requirement 规范要求



- **Special Inspectors**  
特殊的检查人员
- **Complex Fire Safety Systems**  
复杂的消防系统
- **IBC, NFPA 101, NFPA 5000**  
国际建筑规范,美国生命安全规范101,美国消防协会建筑规范5000

# **Special Inspection**

## **特殊检查**

- **Team approach utilizing:**
  - Fire Protection/Mechanical Engineers
  - Air Balance Personnel

采用小组协作

  - 消防工程师/机械工程师
  - 压差平衡检测人员
- **Responsible to certify that the system has been installed in accordance with the approved design documents**

具有认证系统按照审核通过的设计文件进行了安装的责任
- **Does not redesign the system**

不是对系统进行再设计

# **Smoke Control System**

## **烟气控制系统**



**IBC “Exhaust Method” and NFPA 92B - Open spaces, smoke exhaust to maintain smoke layer above people on highest occupied level.**

**IBC “排除法”和NFPA 92B-开敞空间排除烟气,以使烟层高度高于最高使用楼层的人员高度.**

# Plan for Testing

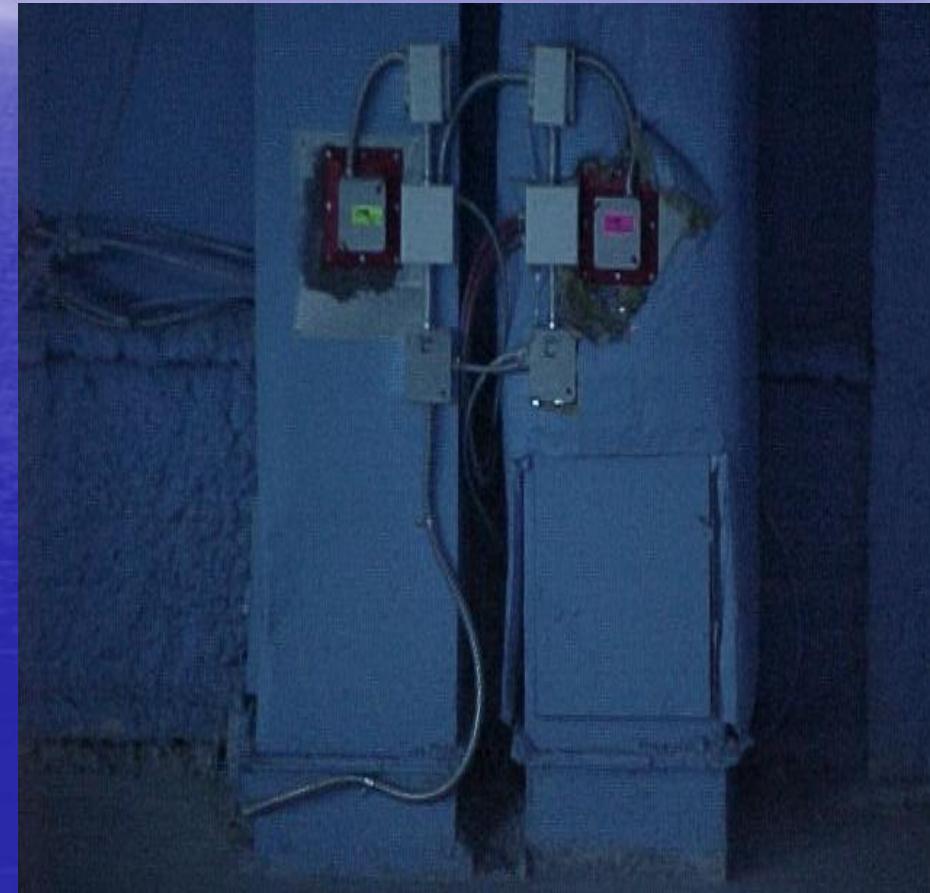
## 测试计划

- Agree in advance on a test plan involving:
  - Design Engineer
  - Building and Fire Inspection Authorities
  - General Contractor
  - All Subcontractors测试前确认参与人员:
  - 设计工程师
  - 建筑和消防检测主观部门
  - 总承包商
  - 所有次承包商
- Schedule test time, including time of day  
确定测试时间, 包括所需天数
- Keep the AHJ informed  
使主管部门始终了解进度情况

# Inspection Items

## 检查项目

- **Structural Integrity**  
结构完整性
- **Duct Leakage**  
管道泄露
- **Initiating Devices (Waterflow, Smoke detectors)**  
启动装置(水流指示器, 烟气报警器)
- **Sequence of System Operations**  
系统操作动作程序
- **Control Priorities —Automatic and Manual Overrides**  
控制优先-自动和手动



# Inspection Items

## 检查项目



- **Pressure Differential/Exhaust Air Flow Measurements—Includes Fan Data**  
压差/排除气流速度度量值  
-包括风机数据
- **Emergency Power Operation**  
紧急电源动作

# Inspection Sequence

## 检查顺序

- **Detailed device inspections**  
详细的设备检查
- **Subsystem operation tests**  
子系统的动作测试
- **Full system functional tests**  
全部系统的功能测试
- **Air flow/pressure differential verification**  
气流/压差验证测试



# AHJ Observation

## 主观职能部门的观测



# Other Test Methods

## 其他测试方法

- **Chemical smoke, tracer gas and real fire tests**
  - Limited value in evaluating certain system performance
  - Validity as methods of testing a smoke-control system is questionable
  - Detailed discussion in NFPA 92A, Section A.5.3.3.6 and NFPA 92B, Section 5.3.6.2

化学烟气,泄露气体和真实火灾测试

- 评估某些系统性能时受限
- 对于测试烟气控制系统性能有效性值得怀疑
- NFPA 92A, A.5.3.3.6章节和NFPA 92B 5.3.6.2章节中有详细讨论

# **"Cold" Smoke Test"**

## **“冷烟测试”**



# Documentation 文件

- **Complete test records are essential.**
- **Deposit a copy of all test documentation in the Fire Command Center:**
  - **Copy of final smoke control test report.**
  - **Complete set of building plans.**
  - **Up-to-date set of smoke control system plans, also known as “control diagrams.”**

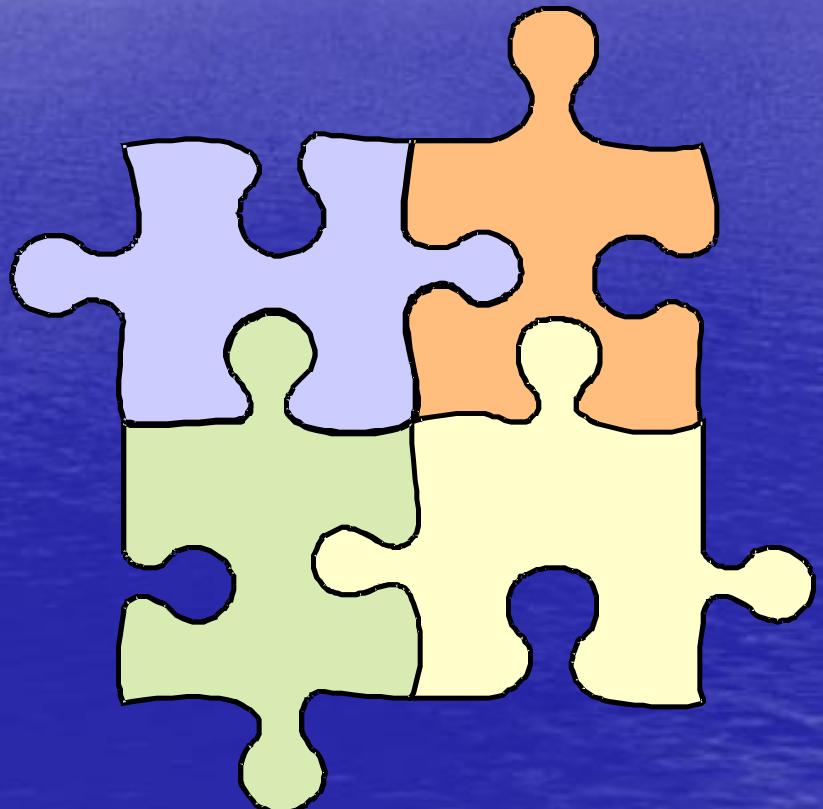
完整的测试数据非常必要

在消防控制中心存备一套测试文件

- **最终烟气控制系统测试数据**
- **一套完整建筑平面图**
- **最新的一套烟气控制系统方案-也被称为“控制图表”**

# The Missing Piece

## 缺少的部分



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